

Apparatus for Weight on Bit Measurements, and Methods of Using Same

Abstract

The present invention is generally directed to a tool for obtaining weight-on-bit (WOB) measurements and methods of using such a tool. In one illustrative embodiment the tool comprises a body, at least one strain gauge cavity in the body, the strain gauge cavity having a strain gauge mounting surface that is located at a position such that a region of approximately zero axial strain due to downhole pressures during drilling operations exists on the mounting surface when the tool is subjected to downhole pressures during drilling operations, and a weight-on-bit strain gauge operatively coupled to the mounting face above the region of approximately zero axial strain. In another illustrative embodiment, the method comprises providing a weight-on-bit measurement tool comprised of a body, at least one strain gauge cavity in the body, the strain gauge cavity having a strain gauge mounting surface that is located at a position such that a region of approximately zero axial strain due to downhole pressures during drilling operations exists on the mounting surface when the tool is sub-

jected to downhole pressures during drilling operations, and a weight-on-bit strain gauge coupled to the mounting face above the region of approximately zero axial strain. The method further comprises positioning the tool in a drill string comprised of a drill bit, drilling a well bore with the drill string, and obtaining weight-on-bit measurement data using the weight-on-bit strain gauge in the tool.